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AUTHOR Darch, Craig; And Others
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ABSTRACT

Several evaluation formats were used to examine the impact that the Direct Instruction Model had on 600 selected students in Williamsburg County, South Carolina, over a 7-year period. The performance of students in the Direct Instruction Model was contrasted with the performance of similar students (on the basis of family income, ethnicity, percent with preschool experience, percent with female head of household, and chronological age) who were taught with the district's usual curriculum materials and methods. Students were tested in the basic skills of reading, mathematics, language, and spelling, and measures of self-esteem were taken. Students were compared on standardized tests of academic achievement, the South Carolina Test of Basic Skills, and retention rates at the end of the 12th grade. The direct instruction students showed significantly higher achievement than the local comparison students. Significantly higher results on affective measures were found as well. This report discusses problems facing rural isolated districts such as Williamsburg County and notes extreme poverty, high incidence of illiteracy, and extremely low academic achievement. Components of the Direct Instruction Model are described including innovative curriculum, increased time engaged in academic tasks, and staff development activities. Seven data tables are included. (JHZ)

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Evaluation of the Williamsburg County Direct Instruction Program: Factors Leading to Success in Rural Elementary Programs

Craig Darch

Auburn University

Russell Gersten, Robert Taylor

University of Oregon

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Running head: RURAL ELEMENTARY PROGRAMS

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Abstract

This paper presents the results of several evaluation studies designed to examine the impact the Direct Instruction Model had on selected students in Williamsburg County, South Carolina. Over 600 students participated in a 7-year period. Because Williamsburg County is an isolated rural county, this school improvement project has relevance to school improvement efforts in other rural communities. The performance of students in the Direct Instruction Program was contrasted with the performance of similar students in the district taught with the curriculum materials and methods which were routinely used in the school district. Students were tested in all basic skill areas: reading, math, language, and spelling. Measures of self esteem were taken also. Students were compared on: (a) standardized tests of academic achievement; (b) the South Carolina Test of Basic Skills; and (c) retention rates at the end of the 12th grade. Results of these studies show that the Direct Instruction students outperformed the local comparison students on virtually every measure utilized.

Evaluation of the Williamsburg County Direct Instruction Program:

Factors Leading to Success in Rural Elementary Programs

Walter Dearborn (Carnine & Gersten, 1986) once observed that the best way to demonstrate understanding of an educational or social problem is to intervene and solve it. The national Follow Through Project, begun in 1967-83 by the U.S. Office of Education, was conceived in this spirit. Innovative educational programs were provided to low income minority students in the primary grades in a variety of communities. The results of the national evaluation (Stebbins, 1976; Stebbins et al., 1977) indicated that of the 80 projects evaluated across the country, the Direct Instruction Follow Through Project in Williamsburg County, South Carolina was the most effective. The evaluation indicated significant positive impact on students' basic academic skills and cognitive-conceptual skills.

The major purpose of this article is to describe the Direct Instruction educational and staff development model that was utilized in Williamsburg County. In addition, results of the numerous evaluations conducted to assess the effectiveness of Direct Instruction Model with low performing students in a rural southeastern school system are described and will be discussed.

Because Williamsburg County is an isolated, rural community, by identifying and discussing the components that led to the

program's success, useful insights into school improvement in rural areas can be gained.

Interest in rural education has been increasing in the last several years. There is a growing awareness that there are subtle, but important differences between school improvement in urban and rural areas. Effective program improvement in rural settings has lagged behind efforts in larger districts. Nachtigal (1982) noted:

> Rural education in America has traditionally been looked upon as the poor country cousin of the public school systems. By accepted standards, it has been poorly staffed and less well financed; it has offered fewer educational opportunities; and it has turned out students less well equipped to cope with an industrialized urban society. (p. 3)

Williamsburg County, a rural agricultural community in South Carolina, is representative of the type of rural setting that Nachtigal refers to. According to the 1970 census Williamsburg County was the poorest county in the 48 contiguous states of the U.S. It has an extremely high incidence of illiteracy, ranking third for the state of South Carolina in the proportion of adults who either never attended school or attended less than 3 years of school. Eighty percent of the population is black. Typically, academic achievement is extremely low in the district. For

example, the average low income high school student graduates high school at a sixth grade reading level.

Formal evaluations and statistical analyses fail to do justice to the extremity of the problems in isolated rural areas such as Williamsburg County. Urban audiences often have difficulties conceiveing of, or visualizing the extreme lack of outside stimulation and limited opportunities in the area; nor the massive problems in affecting change in such an area.

Because of the previous failure in Williamsburg County to teach students basic academic skills in the primary grades, and the community's interest in upgrading instruction, representatives of the county school board chose to affiliate with the Direct Instruction Model (Becker, Engelmann, Carnine, Rhine, 1981) as part of the U.S. Department of Education's Follow Through Project. The model was designed to provide an innovative curriculum, increase the academic engaged time of the students who participated in the Program, and--by its innovative use of instruction aides--increase the amount of time given to small group instruction.

This model of instruction was used with elementary grade students over a 14-year period. The performance of students in this program was constrasted with performance of similar students in the district taught with the curriculum material and methods that were routinely used in the school district. Students were

tested in all basic skill areas: reading, math, language, and spelling; along with measures of self-esteem. This evaluation included results from these independent sources: (a) Abt evaluation (an independent evaluation of Follow Through contracted to Abt. Associates by the U.S. Department of Education, (b) The University of Oregon evaluation, (c) the statewide assessment program, and (d) a longitudinal follow-up study conducted to assess the ability of students to master specific objective criterion developed by the State of South Carolina.

These evaluations were designed to help ensure that the most pertinent questions concerning an intensive educational intervention in a low performing rural school district were investigated. First, data were collected which allowed for a direct comparison with a local control group. Next, the replication of effects across time (stability of effects) were evaluated by analyzing available data, in some cases, over a 7-year period. Further, although most measures utilized were the traditional standardized measures used in many evaluation studies (e.g., MAT, CTBS), two other measures, both tied into the systems' evaluation program were also used. This added to the validity and increased the generalizability of these results.

Method

Subjects and Setting

The Direct Instruction Program was implemented in three elementary schools in the county; one was located in a small town, the other two schools were located in agricultural areas. Over 99% of the Follow Through students qualified as low income by Follow Through guidelines. Approximately 98% of the students in the Follow Through schools were black. In total, over 600 students participated in the study over a 7-year period.

Table 1 presents demographic information on the Follow Through and comparison (Non-Follow Through) samples for students who entered first grade in 1969 and 1970 and were included in the independent evaluation of Follow Through conducted by Abt Associates. The samples were quite comparable on all demographic variables--family income, percent with preschool, race, percent with female head of household, and chronological age. The entry scores on the Wide Range Achievement Test were also equivalent. Any minor discrepancies in entry scores were adjusted by Stebbins et al. (1977) using analysis of covariance procedures (see below).

Insert Table 1 about here

Nature of the Intervention: Components of Direct Instruction

The curriculum and classroom organization of the Direct Instruction Follow Through model had three major instructional components: (a) classroom organization, (b) the Distar curriculum, and (c) specialized teaching techniques. In addition, there was a specific model of inservice teacher training and supervision.

The major goal of the program was to give economically disadvantaged children sufficient basic skills in the areas of reading, writing, arithmetic, and language to compete with their more advantaged peers. The major components of the intervention are listed and discussed below.

Classroom organization. Follow Through classrooms were staffed by one teacher and one paraprofessional aide. The class was divided into small groups for instruction not only in the area of reading, but also for math and oral language.

Classroom instructional aides served as teachers. In many low income classrooms aides predominately perform clerical tasks; the paraprofessionals in the Direct Instruction classrooms actually taught groups in language and math. This resulted in a more efficient use of instructional time, and more interactive teaching.

The curriculum. The core of the curriculum was the Distar and Reading Mastery Instructional System, which is designed for

small group instruction. Each of the Distar programs provides for sequenced, programmed instruction. The Follow Through Program used specially designed materials (commerically called Distar, or SRA Reading Mastery), with structured teacher presentation manuals. The materials assumed nothing in the way of entry skills for the student, and systematically taught students every required academic skill--from left-right orientation, to strategies for sounding out words, to comprehension and problem solving skills.

Teaching strategies and techniques. These were based on current research on maximizing achievement growth. The teaching strategies that were used in these lessons included: (a) teaching to mastery; (b) explicit, step-by-step modeling of strategies; (c) systematic correction procedures, to enable the teacher to correct all errors effectively and efficiently and to transform student errors into positive learning experience; (d) frequent use of unison group responses (especially in the beginning levels); and (e) positive reinforcement and clear statement of rules and procedures.

Meaningful, Academically Focused Staff Development

The other focal area of the program were the unique staff development procedures. Throughout the first 2 years, both teachers and aides received inservice training in a group setting on teaching and remediation strategies. These group sessions were always augmented by classroom observations by the supervisors,

followed by meetings with the teacher. The major purpose of these observations was to relate the material covered to the needs of students in the teacher's class, and each individual teacher's strengths and weaknesses. The coaching model (Showers, 1984) was used; often the supervisor would take over the group for a brief period of time and model alternative teaching techniques. She would then observe teachers using the new techniques, and return in 1 to 2 weeks to observe progress and provide feedback. Following the classroom observations, teachers were always given feedback, which included a discussion of aspects of successful teaching and given specific recommendations for improvement.

During the first year of implementation, teachers were observed at a minimum of once per week by trained supervisors. These supervisors were given extensive training on how to supervise (Gersten, Miller, Davis, Green, & Morvant, in press). The supervisors provided specific feedback to teachers about their performances on critical instructional behavior: pacing of lessons, feedback given to low performing students, and how errors were corrected. This feedback always centered on the child. For example, if a teacher failed to properly use a correction procedure the trainer would indicate the specific problems and illustrate how proper implementation of correction procedures would increase student learning. Teachers who failed to properly implement even the most basic effective teaching and classroom

management strategies were quickly identified and provided with intensive feedback and coaching. Those teachers who were successful at implementing basic teaching strategies were next allowed to implement more sophisticated techniques in the areas of remediation and motivational strategies.

Results

Longitudinal Evaluation

This evaluation was conducted by Stanford Research Institute (SRI) and Abt Associates for the U.S. Department of Education. Two groups of children were included: those beginning first grade of the Direct Instruction Program in 1969 and those beginning in 1970. Since random assignment of children to treatment was deemed politically unfeasible, a quasi-experimental design was utilized. A demographically equivalent local comparison group was selected by SRI from two schools in the county (this was done for all Follow Through sites across the country). Demographic information was collected on all Follow Through and comparison group children on the variables listed in Table 1 (which were later used as potential covariates): family income, ethnicity, mother's education, primary language spoken at home, and academic entry skills.

Dependent measures. All students in the Follow Through and comparison classrooms were tested upon entry into the program on the Arithmetic subtest of the Wide Range Achievment Test.

Children were then tested at the end of grade 3 on the Metropolitan Achievment Test (MAT). The subtests of the Metropolitan are generally considered reliable, with internal consistency coefficients over .85.

Two affective measures, the Coopersmith Self-Concept Inventory and IARS, were utilized as supplemental measures. The reliabilities of these tests are appreciably lower than the MAT--.69 for Coopersmith; .55 for IARS (House et al., 1978)--though many would argue they are reliable enough to be utilized in evaluations of mean group performance (Cook & Campbell, 1979; Wisler, Burns, & Iwamoto, 1978).

Results. Perhaps the clearest way to interpret the impact of the intervention is to look at the percentage of third graders more than 1 year below grade level on each major subtest of the Metropolitan Achievement Test. Table 2 provides these data. Those students reading below 2.8 by the end of the third grade were considered educationally at risk. There were at least twice as many "at risk" students in the comparison group than in the Direct Instruction Program for all four academic content areas (see Table 2).

Insert Table 2 about here

Table 3 presents the mean scores on all dependent variables for the students who started first grade in 1970. The same pattern of effects was also found for the group of students who started first grade in 1969. Because of the similarity of the results only the 1970 group of students is reported below. As can be seen significant differences were found for every subtest of the MAT with the exception of Math Concepts for the 1970 group (Stebbins, et al., Vol. IVc, pp. 314, 315) (see Table 3).

Insert Table 3 about here

On the affective measures, consistent significant differences in all domains were also found favoring the 1970 Follow Through children These effects were replicated 1 year later (Stebbins et al., Vol. IVc, pp. 338-339).

Stability of Program Effects

Table 4 shows the achievement levels of third graders who had completed the 3 years in the Direct Instruction Program in

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Insert Table 4 about here

Williamsburg County for the period from 1973 to 1980. The Metropolitan Achievement Test was administered in the years 1973-1976 and the Comprehensive Test of Basic Skills (CTBS) from

1978 to 1980. The results generally show a steady increase in performance over the 7 years in Reading and Math. The increase in language is less striking; though when compared to the local comparison group, the Follow Through students' performance is clearly superior. This superiority of achievement over students in the conventional program is evident in reading as well as math. In 1980, we were able to collect achievement data for demographically similar students in the county schools for 3 years. These 1980 comparison scores from the independent evaluation are presented at the right of Table 4 as a point of contrast. They indicate little overall growth countywide in achievement levels in Reading and Math, from 1973 to 1980, but an increase in Language from the 8th to the 15th percentile.

Finally, all students who were enrolled in the program in 1982 were evaluated on South Carolina's Basic Skills Assessment Program (BSAP). This instrument is administered to all students in the state, and is used to assess the number of students in grades 1, 2, and 3 who meet a predetermined mastery level on state objective's objects in the areas of reading and math. These data are presented in Table 5.

Insert Table 5 about here

Data are provided for reading (upper half of Table) and math (lower half) on the number and percentage of students in grades 1, 2, and 3 for the Direct Instruction group and the Local Comparison group who passed the South Carolina Basic Skills Assessment Program. On the reading component, the average percentage of students passing across the three grade levels was 87%, while only 39% of the local comparison sample met the reading standard for the BSAP. As is clear by looking at individual grade levels, the difference between the Direct Instruction and Comparison group students is consistent across each of the grade levels. A similar pattern occurred in math. The percentage of Direct Instruction students passing was 76%, while the Comparison group had only 52% of their students meeting BSAP standards. These dramatic differences add credibility to the earlier discussed differences on the standardized measures between the two groups of students.

Longitudinal Followup Study: The Enduring Effects of Follow Through on High School Students

A study was conducted to look at the long-range impact of the Direct Instruction Program on the students who participated. This study examined the impact of intensive, effective basic academic skills instruction in the primary grades on the high school performance of children. Measures were taken of (a) graduation from high school (versus dropout rate), (b) retention rate, and (c) college acceptance. Two groups of students were included in

this study--those who began first grade in 1969 and those who began in 1970. These were essentially the same students evaluated by Abt Associates and presented in Tables 1 and 2. The high school performance of these students was contrasted to that of demographically similar students who had participated in the typical curriculum offered by the county for the primary grades. All students in the study were Black; only students who remained in the county school system from first grade through high school were included.

Tables 6 and 7 present the results. The upper half of Table 6 indicates that for those students who began first grade in 1969

Insert Tables 6 and 7 about here

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significantly more Follow Through students (93.1%) graduated from high school than comparison students (81.7%). But for group 2, those students who entered first grade in 1970, the effect is not significant. Also provided are the percent of dropouts and the percent of students still enrolled in school.

Table 7 examines retention rate. We included all retentions between fourth and twelfth grades. This analysis excludes dropouts. In both groups, significantly fewer FT students were retained 1 or more years. Similarly, significantly more Follow Through students graduated on time (in 12 years). For the 1969

group, significantly more FT students were accepted into college (27% of FT students and only 13% comparison students. The results were not significant for the 1970 group of students.

Overall, these results indicate benefits to the students in terms of persistence in school and college acceptance. Fewer students who participated in the Direct Instruction Program were retained during the nine years following exit from the program.

Discussion

The results of this series of evaluations demonstrate significantly higher achievement for students who participated in the Direct Instruction Follow Through Program as compared to the local comparison students. This difference occurred in all academic areas measured. The level of achievement was maintained over a 7-year period. Significantly higher results on affective measures were found as well. This improvement in the children's educational opportunities was most dramatically demonstrated by the differences in the percent of children performing one or more years below grade level in Table 2. The cycle of failure, which had been evident in the years prior to the Follow Through implementation had changed to some extent. The Direct Instruction schools allowed close to grade level educational advancement for an additional 40% of the students.

It is important to note that even during a decade of greater availability of Federal funds for the district's traditional

program and general improvement in rural schools that Direct Instruction students still outperformed local comparison students. In addition, although the Follow Through program was not implemented past third grade, differences were found between the Direct Instruction students who had experienced the program and the local comparison group even after 9 years. This suggests that the results at the end of third grade were not just temporary results, but long lasting differences. The remainder of the discussion will focus upon factors that may have led to the superior level of performance and implications for other districts.

Appropriate Curriculum: Sequence and Topics Covered for Students Entering With Low Academic and Preacademic Skills

The overwhelming proportion of first grade classrooms in this country use one of the major basal reading and math series. However, conventional series typically assume too much in the way of background knowledge for a child from a home with parents with little formal education. This point has been elucidated in analyses of primary grade readers by Beck and her colleagues (1981). Beck indicates that basals typically assume too much in the way of background knowledge and vocabulary knowlege on the part of the student. Beck demonstrates this with an example of a story from a second grade reader about a racoon who inadvertently frightens some bandits. The whole story hinges on the concept of

coincidence or false causality. Yet the student materials and teacher guides do nothing to promote the concept of coincidence. A variety of other concepts and story elements are accentuated, all likely to distract the child from an understanding of the critical themes in the story. Beck and her colleagues redesigned the lesson to explicitly teach the concept of coincidence and ask a series of questions that help the students see how the pieces of the story fit together so that the coincidence is misinterpreted, and demonstrated enhanced comprehension from the revised, focused lessons. Similarly, Darch and Gersten (1986) developed focused lessons for a series of expository stories, the revised lessons again resulted in improved comprehension.

One factor that we suspect contributed to the overall positive effects of the Direct Instruction Follow Through program was the curriculum used. Core instruction in reading, math and language utilized the Distar Arithmetic and Language and SRA Reading Mastery Series. These series are radically different from conventional basal series in several respects. The most obvious differences are in the degree of structure, the amount of guided practice and the strong synthetic phonics emphasis in the first two levels reading series. In addition, in examining these programs series, one will note that all necessary preskills are taught directly and clearly.

In addition, the curriculum helped to decrease the amount of "aimless" downtime between structured activities. The teachers who used the Direct Instruction curricula programs were provided explicit direction with regard to which activities to initiate with the students. Several authors (Brophy & Good, 1984) have discussed the important role of smooth transition between activities have in increasing the instructional time students receive which can serve as a foundation to increased achievement levels.

We want to conclude this section by urging that those involved in teaching high risk students carefully examine the curriculum used, and search for curricula that:

1. Do not assume students possess background knowledge or preskills that the students obviously don't possess.

2. Have focused lessons that concentrate on a few key concepts, skills, or strategies and provide adequate examples rather than trying to "expose" students to many concepts in one lesson.

3. Provide extensive guided practice on newly learned skills.

Staff Development and Inservice Training for Both Teachers and Instructional Aides

A quote, taken from an American Association of School Administrators (Pelpon, 1983) probably best characterizes the

"state of the art" of the present sophistication of many staff development programs. "The potential pattern for organizing continuing professional growth is limited only by the constraints of the imagination. . . . Less creativity has been applied to the design (of staff development progarms) than to virtually every other aspect of educational administration" (p. 7).

The teacher training and staff development approach used in the Direct Instruction Program implementation differed considerably from models of staff development often proposed for rural schools. Sparks (1983), for example, has suggested that the most effective model is one which incorporates videotapes of peers teaching, brainstorming among teachers, peer observations, and collaborative decisions. She feels this model has the greatest likelihood of being implemented by school teaching staffs.

An alternative to the teacher training and staff development approach discussed above is the one used in the Williamsburg County Direct Instruction implementation. The orientation here was much more directive, and much more centered on dealing with academic problems experienced by the students than dealing with focusing on needs expressed by the teachers. Especially in low achieving schools, staff development programs need to be specifically designed to help solve everyday problems which occur in the classroom. Supervisory staff must be aware of and be able to prioritize classroom problems and provide to teachers an

efficient model to solve critical instructional issues. Collaboration and brainstorming sessions between the leader and supervisor is a facet of this model, but not necessarily the most important component. Careful assessment of student learning problems, careful guided observations of classroom process, and focused coaching practice, and follow up if they are to successfully utilize an instructional model (Showers, 1985). This is particularly the case when the model requires teachers to implement sophisticated teaching and remediation techniques. If supervisors can help teachers succeed with students they previously found difficult to teach, many teachers will not be intimidated by such close supervision (Gersten, Carnine, Zorefit, & Cronin, 1986; Guskey, 1986).

Inservice must be more than a perfunctory procedure to institute the school year. Instead, it can be functional and should be designed to make use of this valuable time where there are no other distractions. Others have presented a similar argument, stating that teachers will use information from inservice training if the advice contains three elements: the teaching behaviors being trained are clearly defined, are unquestionably related to classroom performance, and are efficient to learn and implement.

Recently, the American Association of School Administrators (Pelpon, 1983) has suggested how inservice/staff development

programs can be most effective in rural school districts. The core of the suggested model centered on several variables: modeling to teachers the kind of teaching behaviors to be learned; opportunities for participants to practice these teaching techniques in controlled situations; ongoing supervision and follow-up with specific feedback on how closely teaching procedures are being followed; long term follow-up and reteaching of unsuccessful teachers if necessary.

The experience which was gained from the Williamsburg implementation and other similar efforts (Gersten, 1986) have helped to clarify, at least to us, what are some of the specific teaching behaviors staff in rural areas need to be proficient with in order to be most successful with students. Teacher training programs which train teachers the components of the generic direct instruction model and the more curriculum based Direct Instruction approach will result in more successful teachers.

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Table 1

Demographic Information - Follow Through and Local Comparison Group[a]

	Students beginning first grade in 1969		Students begining first grade in 1970	
	FT	NFT	FT	NFT
Fall kindergarten WRAT - Total	27.3	26.0	34.7	43.1
Mean family income (in dollars)	$2614	$2304	$1981[c]	$2100
Race				
% Black	95	99	99	100
% White	5	0	1	0
Mean entry age (in months)	72.1	72.9	--[b]	--[b]
Percent with preschool	--[b]	--[b]	99	100
Percent female head of household	--[b]	--[b]	18	11

[a]From Stebbins et al. (1977) Volume IVC, Appendices, Part I, pp. 325 and 343.

[b]Unavailable.

[c]Medians reported for 1970 group of students.

Table 2

Percent of Children Performing One or More Years Below Grade Level on Metropolitan Achievement Test*

	Direct Instruction	Local Comparison (Non FT)
Total reading	45.2	83.3
Total math	32.9	77.8
Total language	42.5	88.9
Total spelling	38.4	88.9

*From Stebbins et al. (1977), Vol. IVC.

Table 3

Summary of Effects[a] - Abt Evaluation

Outcome Measure	Direct Instruction Group (Students began first grade in 1970) (N = 96) Mean Raw Score	S.D.	Percentile Equivalent	Local Comparison (Non FT) Group (Students began first grade in 1970) (N = 96) Mean Raw Score	S.D.	Percentile Equivalent	p
Metropolitan Achievement Test							
Word Knowledge	18.2	7.23	22nd	9.95	5.71	5th	.01
Reading	13.9	5.02	18th	10.1	3.60	6th	.01
Math Computation	15.8	5.02	22nd	12.16	3.76	8th	.01
Math Problem Solving	11.9	4.3	22nd	9.8	3.15	14th	.05
Math Concepts	11.82	4.47	14th	9.67	3.98	8th	ns
Language	22.11	8.41	40th	9.91	3.86	8th	.01
Spelling	12.26	11.05	26th	4.82	8.46	12th	.01
Affective Measures							
Coopersmith's Self-Esteem	36.2	6.05	--	30.2	8.41	--	.01
IARS-Locus of Control/Negative	9.5	2.82	--	8.0	2.54	--	.01
IARS-Locus of Control/Positive	12.4	2.73	--	10.3	2.69	--	.01

[a]This table is adapted from Stebbins et al. (1977), Volume IV C, Part I, p. 342.

Table 5

Follow Through and Non Follow Through Sample on the S.C. Basic Skills Assesment Program (BSAP) for Grades 1 and 3 in Reading and Math Performance (Spring, 1982)

	Direct Instruction			Local Comparison Group (Non Follow Through)		
	Grade 1	Grade 2	Grade 3	Grade 1	Grade 2	Grade 3
			Reading			
N	60	60	58	145	120	44
Number meeting standard	58	49	48	76	23	20
Percent meeting standard	96.7	81.7	82.8	52.4	39.1	45.5
			Math			
N	60	60	58	71	52	44
Number meeting standard	48	41	47	37	23	28
Percent meeting standard	80	68.3	81	52.1	44.2	64

Table 4

Stability of Effects: Achievement of Low Income Minority Students Completing Three Years of Direct Instruction Program: 1973-1980.

Year of Grade 3 Completion	Direct Instruction Samples							Comparison Samples	
	1973	1974	1975	1976	1978	1979	1980	1973	1980
	MAT Total Reading				CTBS Total Reading				
Percentile	14th	18th	26th	22nd	25th	29th	30th	7th	11th
Mean Standard Score	48.6	50.5	53.5	52.1	330.8	339.6	340.9	44	290.6
SD	7.6	6.3	7.0	9.0	50.8	47.9	-	6.8	-
N	122	94	125	122	110	148	165	96	151
	MAT Total Math				CTBS Total Math				
Percentile	11th	20th	36th	39th	28th	34th	39th	7th	8th
Mean Standard Score	56.3	60.8	66.8	67.5	331.0	341.3	345.3	52	285.8
SD	8.0	10.0	11.3	10.5	38.3	37	-	10.3	-
N	120	94	125	122	110	148	165	96	87
	MAT Total Language				CTBS Total Language				
Percentile	34th	30th	28th	34th	38th	31st	37th	8th	15th
Mean Standard Score	64.1	62.1	61.2	64.3	366.0	372.8	384.5	50	331.6
Standard Dev.	9.7	9.8	11.6	11.2	51.9	57.4	-	4.3	-
Sample Size	122	94	125	122	110	148	165	96	151

Table 6

Longitudinal Followup Study: Percentage of Graduates and Dropouts for Direct Instruction Follow Through and Local Comparison Groups

	Group	N	% Graduated	% Drop	% Still In School	p
1[a]	Follow Through	131	93.1	6.1	0.8	.01
	Comparison	71	81.7	15.5	2.8	
2[b]	Follow Through	99	85.9	8.1	6.1	N$
	Comparison	71	83.1	7.0	9.9	

[a]began first grade in 1969.

[b]began first grade in 1970.

Table 7

Percent of Students Who Were Retained During Grades 4 to 12

	Group	N	% Retained	% Graduated on Time (or early)	p
1[a]	DI Follow Through	122	34.2	65.8	.001
	Comparison	58	55.2	44.8	
2[b]	DI Follow Through	85	12.9	87.1	.055
	Comparison	59	25.4	74.6	

[a]began first grade in 1969.

[b]began first grade in 1970.